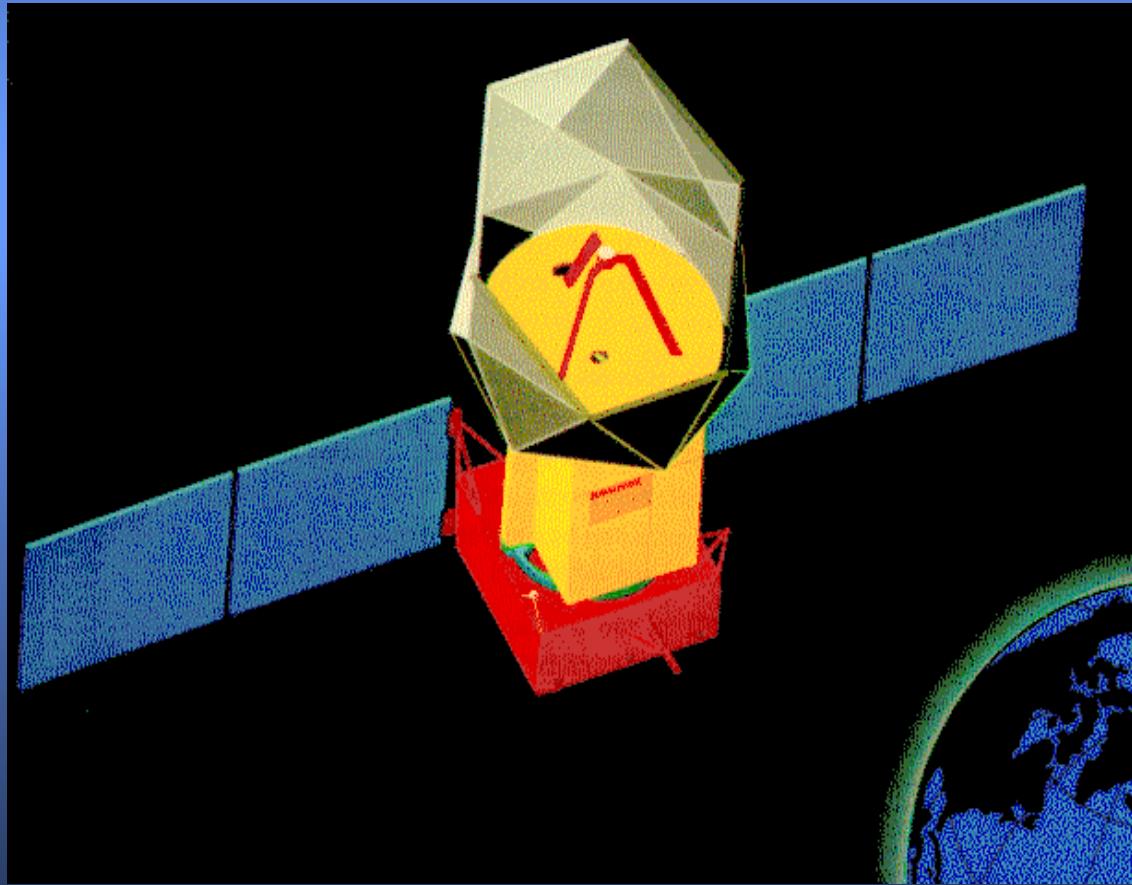


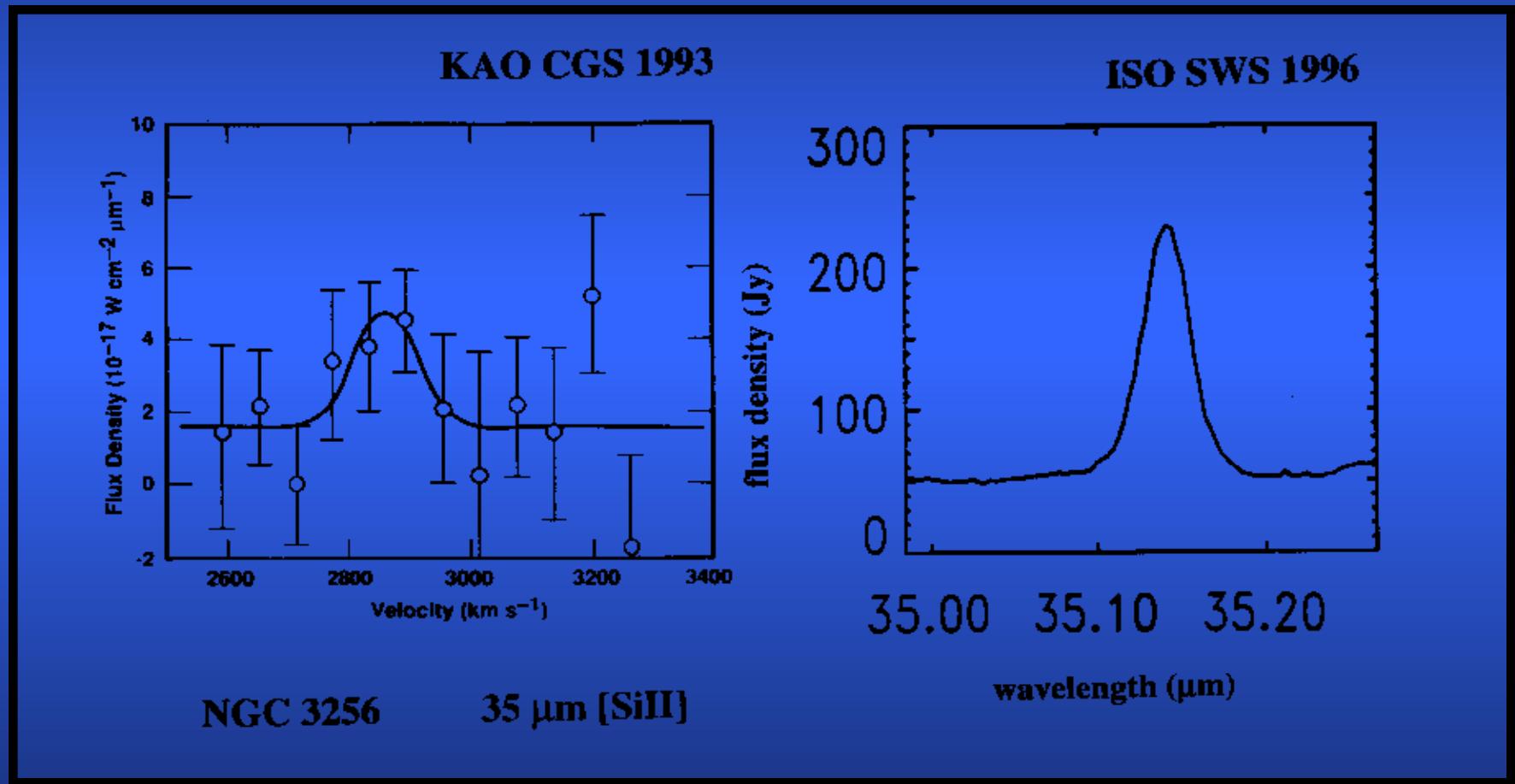
ISO and FIRST

Reinhard Genzel

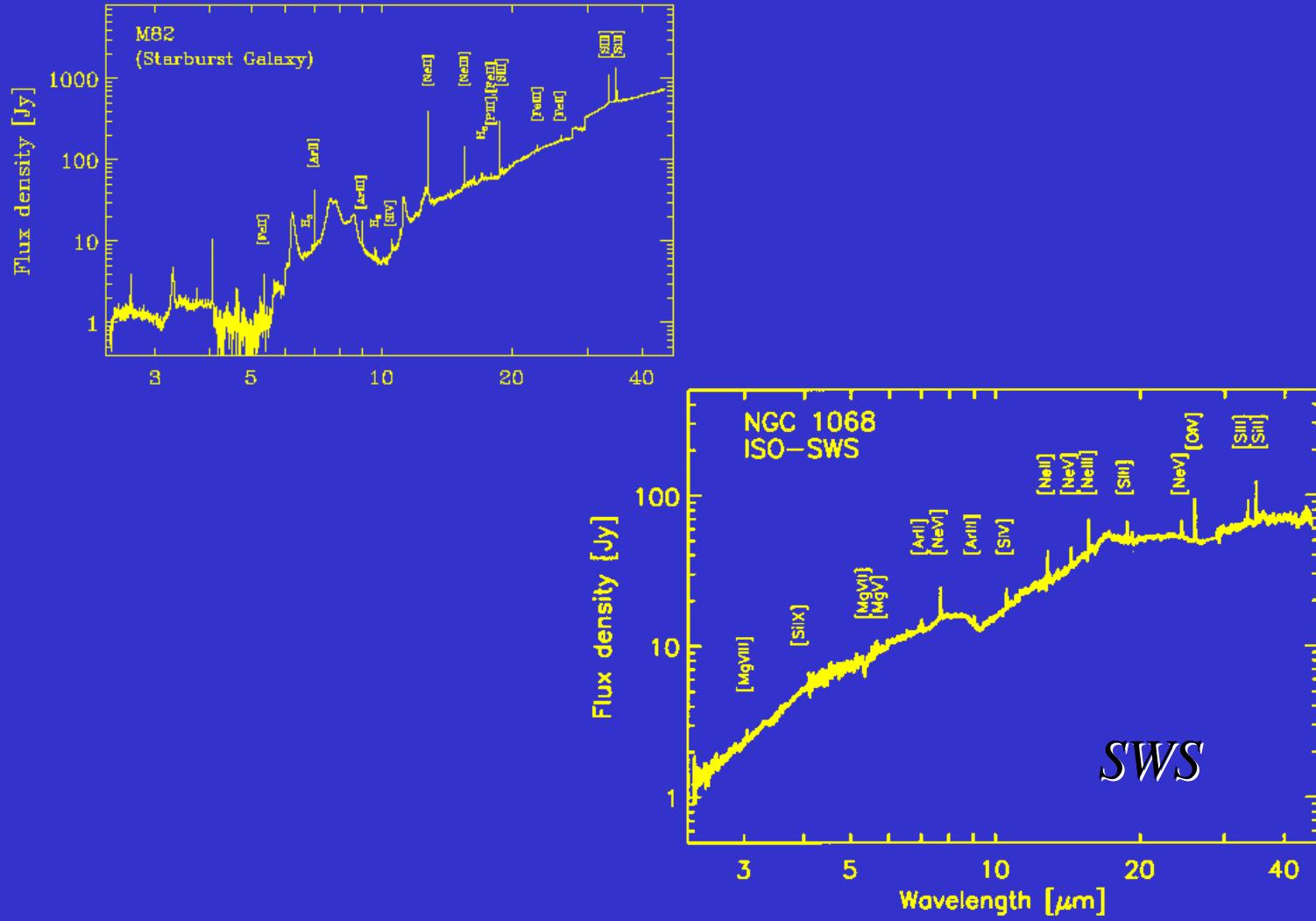
Max-Planck Institut fuer extraterrestrische Physik,
Garching, FRG



From KAO to ISO

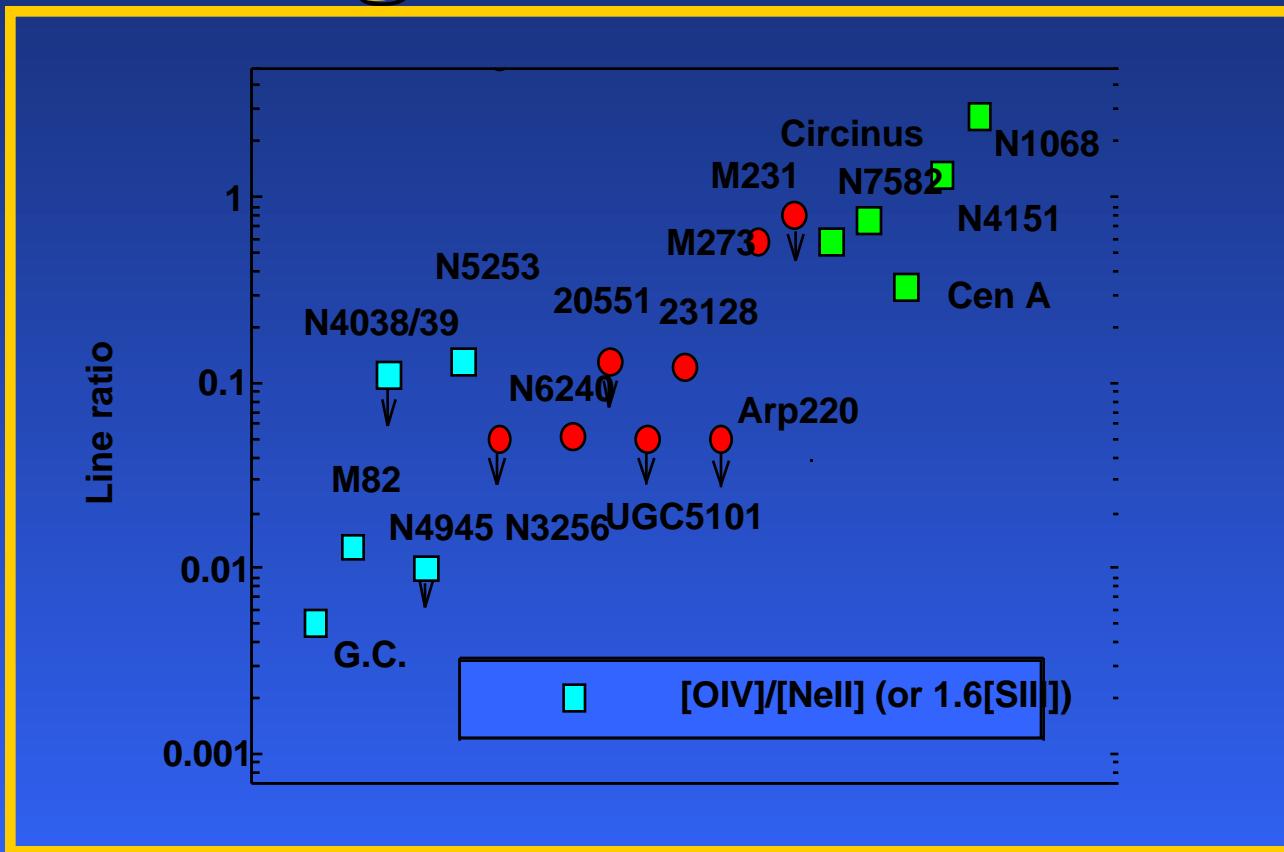


AGNs vs Starbursts



*Lutz et al. 97, Kunze et al. 97,
Moorwood et al. 96, Astr.Ap.315, L109*

what powers ultra-luminous galaxies ?

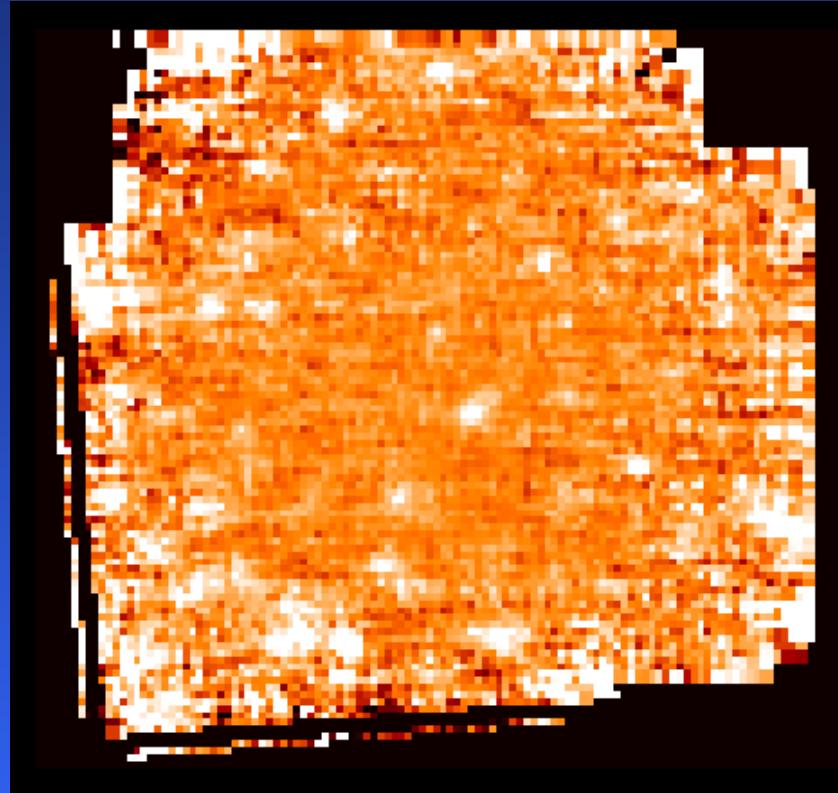


Lutz et al. 1996, Astr.Ap.315,L137

Sturm et al. 1996, ibid, L133

Genzel et al. 1997, in prep.

ISO deep imaging



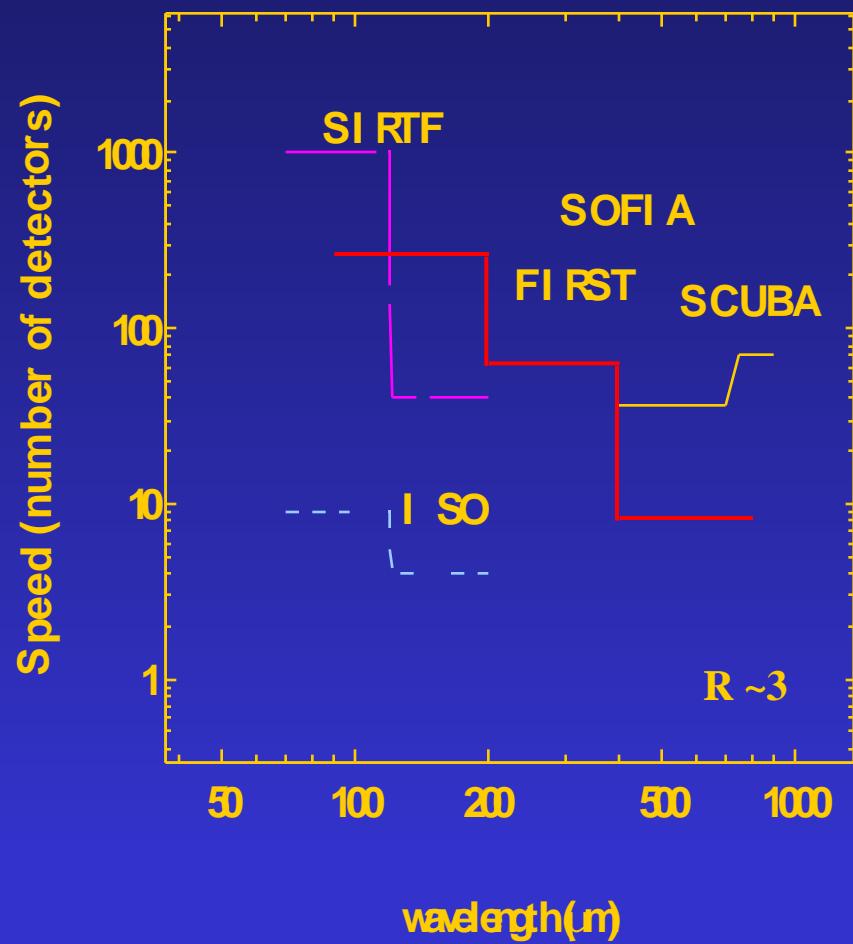
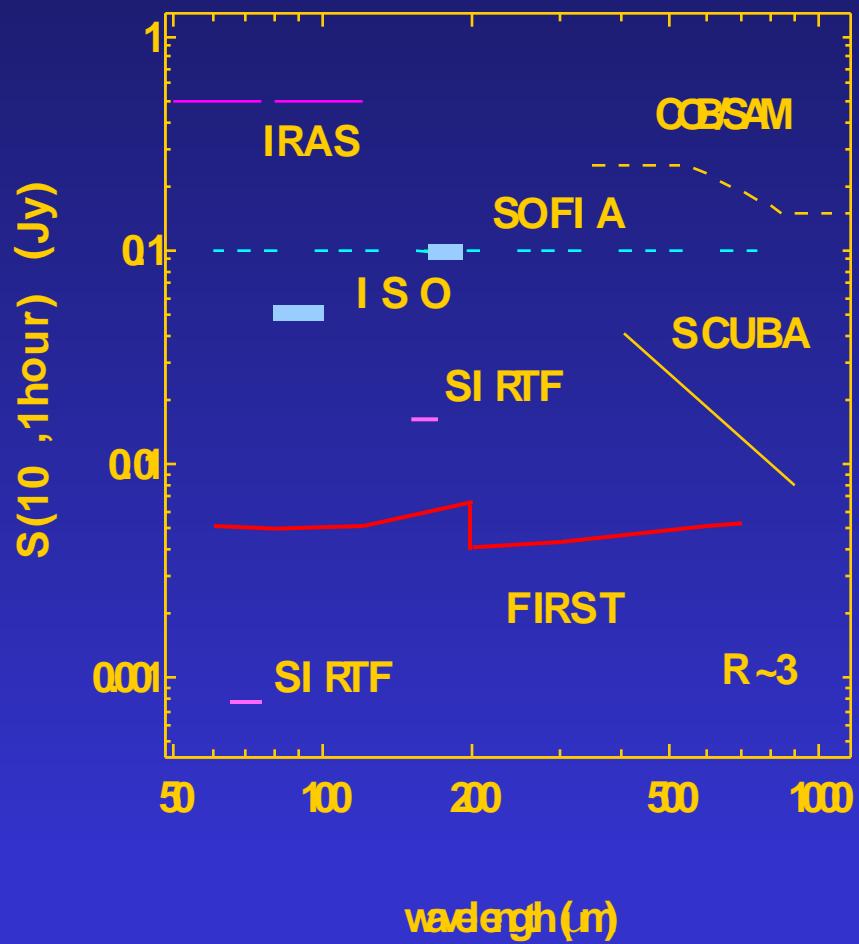
CAM

Rowan-Robinson et al. 1997

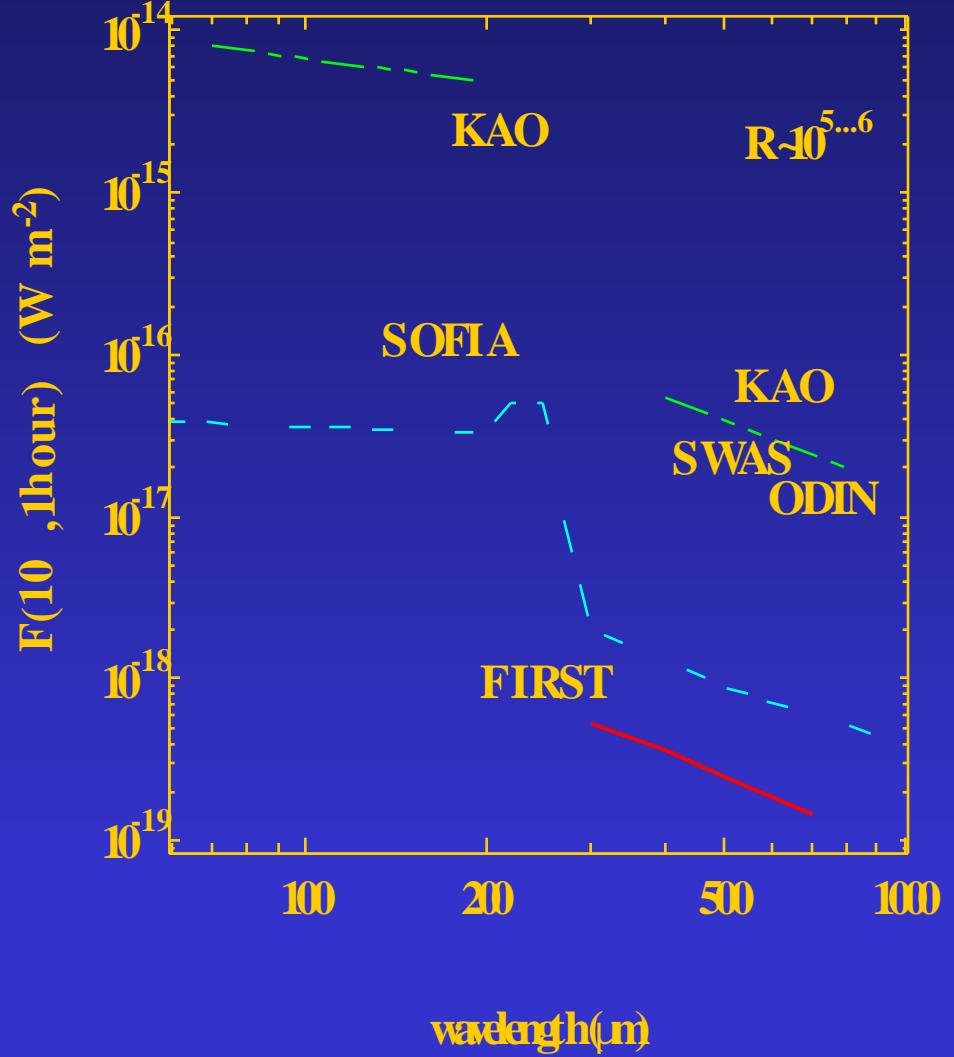
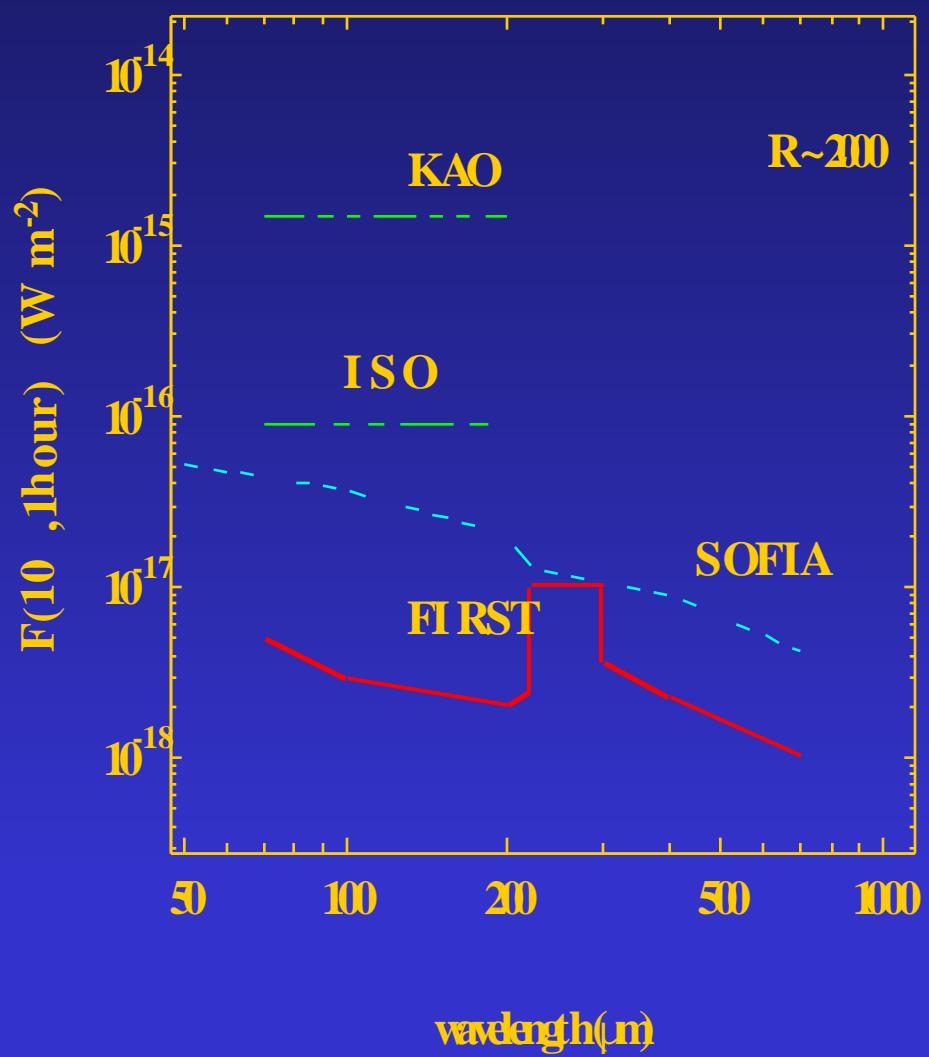
FIRST

- *3.5 m passively cooled (80 K) telescope with <5% emissivity, diffraction limited (6" at 100μm)*
- *photometry, moderate ($R \sim 10^3$) and high resolution ($R \sim 10^{5..6}$) spectroscopy*
- *10^2 to 10^3 pixel detector arrays*
- *coverage 70 to 800μm*
- *>4.5 year lifetime in L2*
- *emphasis on spatial/spectral surveys*

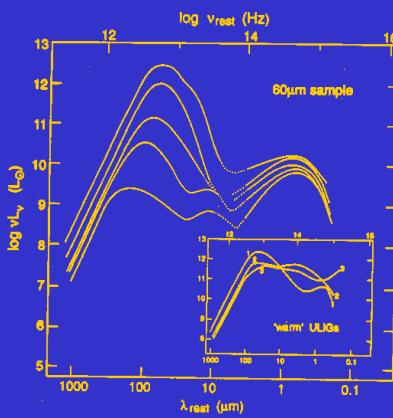
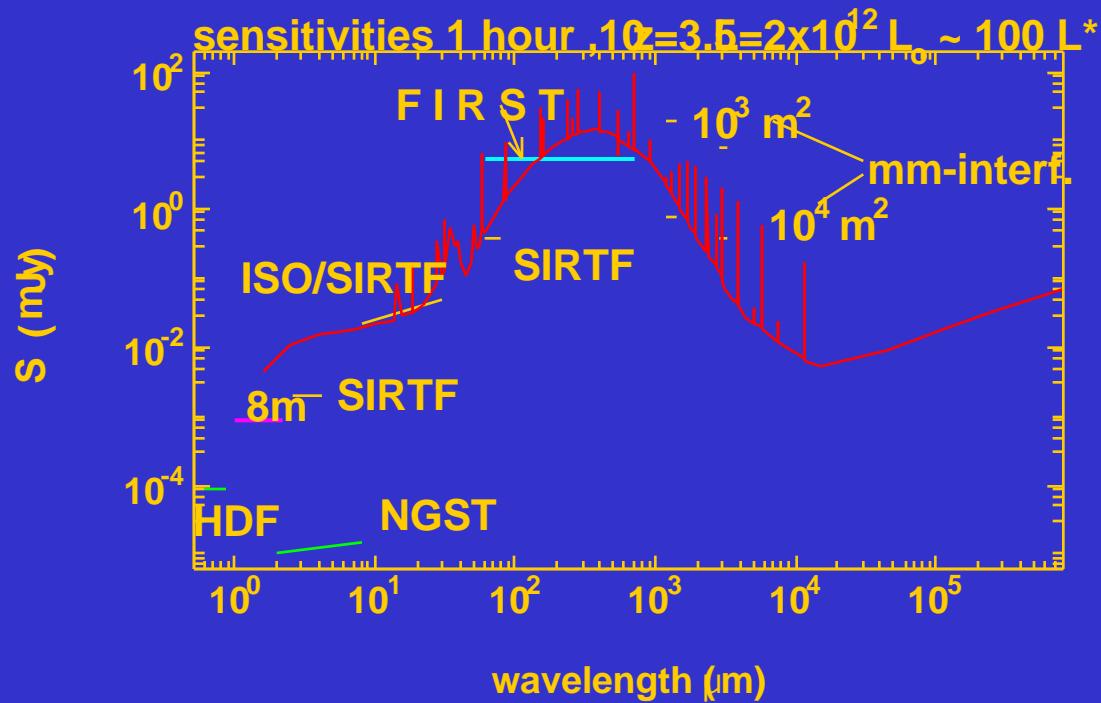
FIRST sensitivities photometry



FIRST sensitivity spectroscopy

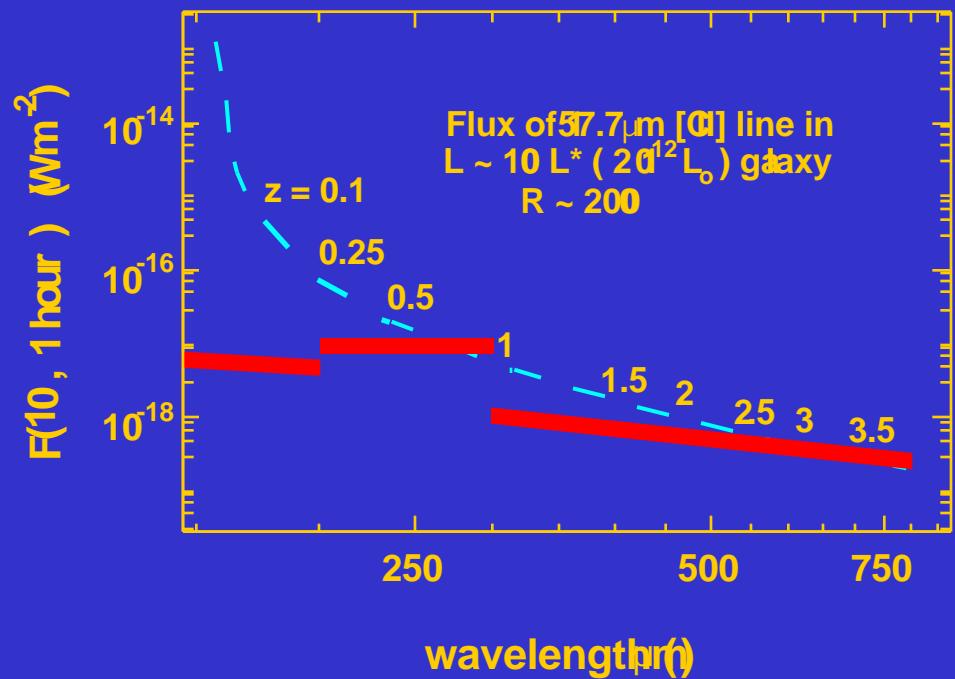
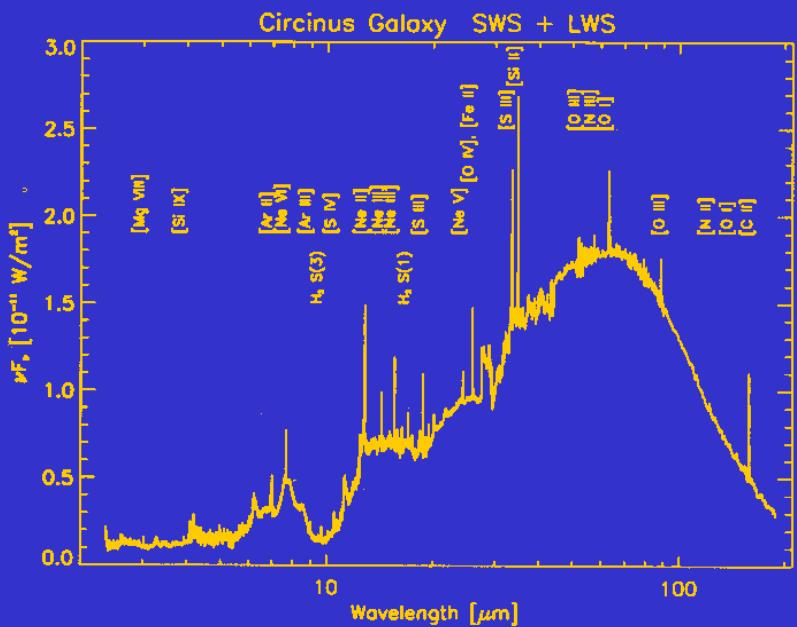


Exploring Bulge Formation at z=2-5



- determine luminosity and nature of dusty starbursts at high z
- FIRST ideally suited for large area surveys and spectroscopic followup

Spectroscopy of AGNs and starbursts



- tracers of obscured energy sources in galactic nuclei at $z < 3$
- molecular ISM in distant galaxies

Status of FIRST

- *selected 1993 as Cornerstone 4 of ESA's HORIZON 2000 Program*
- *2005-7 launch (Ariane 5)*
- *~4.5 yr life time with L2 orbit and cryostat*
- *presently in pre-phase B: studies of telescope, spacecraft module, cooling, model payload, incoherent and heterodyne detectors*
- *considerations of merging with PLANCK and of NASA participation*
- *re-confirmation by SPC in 1997/98, instrument AO in 1998, phase B >1999*